Thinking About You Baby: Expectant Parents' Narratives Suggest Prenatal Spillover for Fathers

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Abstract

The coherence of parents' narratives about their children, which is the extent to which descriptions are accepting, consistent and complex, are thought to reflect optimal information processing of interpersonal relations and as such facilitate sensitive and responsive parenting. However, despite recent meta-analytic findings that have demonstrated links between the nature of prenatal thoughts and feelings about the unborn infant and later parenting, studies have yet to examine the narrative coherence of expectant parents' descriptions of their infant and future parent-child relationship. This study reports on the novel use of the five-minute speech sample to capture variation in the coherence of 400 first-time expectant parents' narratives describing their unborn infant and future relationship with them. On average, both expectant mothers and fathers struggled to provide a coherent description of their unborn infant. Coherence ratings did not show within-couple associations and were not related to either demographic characteristics, depressive symptoms or mode of conception (e.g., use of assisted reproductive technologies). An actor-partner interdependence model (APIM) did however demonstrate that reduced couple relationship quality and life satisfaction were associated with lower levels of narrative coherence in fathers, but not mothers. Model constraints illustrated the coherence of expectant fathers' narratives about their infant and future parent-child relationship may be particularly vulnerable to the influence of the couple relationship. Future longitudinal work is needed to establish the direction of this effect, to explore the stability of narrative coherence across the transition to parenthood and to study links with postnatal parent-child interaction quality and child outcomes.

Key words: five-minute speech sample; pregnancy; coherence; mothers; fathers; actor-partner interdependence model.

Our ability to talk coherently about ourselves and our relationships facilitates us to make sense of novel experiences (Bruner, 1991). A narrative that is truthful, concise yet complete, relevant, clear and orderly (Grice, 1975) is thought to reflect or predict more optimal information processing and psychological adjustment (Waters & Fivush, 2015). According to attachment theory, for parents making sense of a significant other is posited to be crucial in terms of interpreting past and future experiences with one's own children (Main, Kaplan, & Cassidy, 1985) and, as a result, guide behavior. Support for this view comes from a reported positive association between individual differences in the coherence of parents' narratives when describing their children and in their sensitivity during interactions with their 12-month-olds (Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002), with similar findings reported for parents of children with Autism Spectrum Disorder (ASD; Oppenheim, Koren-Karie, Dolev, & Yirmiya, 2009). Moreover, mothers who can provide a coherent description of their children with ASD appear more emotionally available than mothers with an incoherent narrative, even when effects of maternal age, education and the child's adaptive behavior are taken into account (Sher-Censor, Dolev, Said, Baransi, & Amara, 2017). Note, however, that these associations do not demonstrate causal direction. For example, the ability to notice, interpret and respond appropriately to infants' cues may underpin both sensitive interactions and narrative coherence. Nevertheless, in light of links between parental sensitivity and positive child outcomes (Mills-Koonce et al., 2015), understanding parental characteristics, such as coherence, that predict variation in behavior is valuable, with a growing emphasis on the importance of the prenatal context (Glover & Capron, 2017).

Constructing a coherent narrative is particularly important during life transitions when new identities are being formed (Waters & Fivush, 2015). For the majority of new parents, the arrival of a new infant not only brings changes to their identity (Cowan et al., 1985) but often prompts reflection on other significant relationships. Research eliciting expectant parents' narratives of

their own caregivers has consistently found associations between the coherence of these narratives and infant attachment classification (Bakermans-Kranenburg & van IJzendoorn, 2009). However, relatively little research attention has been paid to examining the coherence of the narratives expectant parents provide about their own children (for a review, see Vreeswijk, Maas, & van Bakel, 2012). Yet this appears to be a fruitful area of research. Indirect support for this view comes from the meta-analytic finding (based on data from 14 separate studies and 1862 parent-infant dyads) that expectant mothers (but not fathers) who provided balanced or reflective descriptions of their unborn child (i.e., dimensions that contribute to coherence), or who reported a strong bond with their fetus, were, in the first year of life, more positive in their interactions with their infant (Foley & Hughes, 2018).

Taken together, the above findings highlight the potential long-term importance of variation in narrative coherence in individuals who are making the transition to parenthood. The overarching aim of the current study, which involved 200 British couples expecting their first child, was to examine the coherence of parents' narratives about their unborn infant and future parent-child relationship. Within this, our first goal was to compare coherence ratings for expectant mothers and fathers and assess within-couple associations. Secondly, we aimed to examine individual differences in parental depression, life satisfaction, couple relationship quality and conception (i.e., planned/unplanned and natural/involving assisted reproduction technologies) as correlates of individual differences in prenatal narrative coherence. Below, we provide the background to each of these study goals in turn.

Narrative Coherence in Expectant Parents

Telling a story that makes sense requires the narrator to be consistent, provide sufficient detail, ensure the main characters are reliable and avoid major surprises (Grice, 1975). Arguably, as is the case during pregnancy, the task of describing a coherent narrative about someone you have yet to meet and a relationship you have yet to experience could be extremely daunting. For

parents with an established relationship with their child the task of providing a coherent narrative can be challenging, be that during an in-depth interview (e.g., the Working Model of the Child Interview, WMCI: Zeanah, Benoit, & Barton, 1986) or when reflecting on video footage of their children (e.g., the Insightfulness Assessment, IA: Koren-Karie & Oppenheim, 1997). With this in mind, in-depth interviews are demanding and/or resource intensive and using observational methods of assessing narrative coherence during pregnancy are impractical, thus limiting the quality of the data and as such our understanding of the coherence of narratives gathered prenatally.

One simple means of eliciting narratives is to ask parents to talk, uninterruptedly for five minutes, about their child and their relationship with them (Magana et al., 1986). These 'five-minute speech samples' (FMSS), derived from adult psychiatry, are a reliable means through which to assess adults' emotional functioning and relational processing (Gottschalk & Gleser, 1969) and have led to useful indices of parental warmth, expressed emotion and mind-mindedness across an extended developmental span (Sher-Censor, 2015). Sher-Censor and Yates (2015) adapted the well-validated IA scheme (e.g., Koren-Karie et al., 2002) to facilitate coding narrative coherence from FMSS. The spontaneous talk elicited by the FMSS provides a window into the organisation of parents' thoughts and speech and as such the flexibility of parents' information processing skills (Oppenheim, 2006). Such flexibility, as indexed by an ability able to talk about the child in a way that maintains focus, provides rich detail, covers a range of attributes, is accepting and not overly critical or overwhelmed with concern (i.e., all factors facilitating narrative coherence), is thought to enable more responsive and emotionally regulating parenting and in turn better behavioural and emotional child outcomes (Oppenheim, 2006). Parents who score highly on these indices during the IA are rated as 'positively insightful' (i.e., accepting and multidimensional view provided) whilst low levels may lead to descriptions categorised as 'one-sided' (i.e., unidimensional) or 'disengaged' (i.e., short and

lacking in warmth). Crucially, studies have reported that compared with non-insightful parents, positively insightful parents are more likely to behave sensitively, respond better to parenting interventions, have infants classified as securely attached and have children displaying lower levels of internalising and externalising problems (for a review see, Koren-Karie & Oppenheim, 2018). Consistent with these accounts, Sher-Censor and colleagues have found higher levels of narrative coherence rated from speech samples (but not parenting stress or expressed emotion) are associated with lower rates of internalising and externalising problems in toddlers (Sher-Censor, Shulman, & Cohen, 2018) and fewer observed behaviour problems in pre-schoolers (Sher-Censor & Yates, 2015). These findings replicate those found in previous studies using the IA and provide further support for the validity of measuring narrative coherence via the FMSS.

Lucassen and colleagues (2015) successfully collected FMSS during pregnancy and coded parents' descriptions of their infant and future parent-child relationship using the traditional FMSS expressed emotion scheme. They found higher levels of emotional over-involvement (i.e., indications of over-protection, self-sacrifice or excessive emotion), but not criticism, were associated with reduced maternal support and greater paternal intrusiveness during observed parent-child interactions four years later. Thus, the quality of expectant parents' short narratives about their unborn infants appear meaningfully related to postnatal outcomes (Glover & Capron, 2017), raising important theoretically and clinically-relevant questions about the origins of variability in narrative coherence.

Comparisons and Associations between Expectant Mothers' and Fathers' Coherence

Despite dramatic increases in maternal employment and associated increases in fathers' involvement in childcare (Bianchi, Robinson, & Melissa, 2006), the proportion of parenting studies that include fathers remains stubbornly low. Reflecting this, to our knowledge, no researchers have examined the coherence of fathers' narratives. However, the traditional emphasis on the complementarity of maternal and paternal contributions to childrearing (e.g.,

Bowlby, 1953) has shifted towards a focus on the cumulative or distinct impact of individual differences in mothers' and fathers' behavior, cognitions, and emotions on both parent and child (Sethna et al., 2017). Within this framework, individual differences within groups of fathers and mothers eclipse mean-level differences between mothers and fathers (e.g., Fagan, Day, Lamb, & Cabrera, 2014). Nevertheless, given both fathers' lack of physical connection to the fetus (Ives, 2014) and studies that report more balanced descriptions (i.e., sensitive, accepting and coherent) of the unborn infant in expectant mothers than fathers (e.g., Vreeswijk, Rijk, Maas, & van Bakel, 2015), we predicted that expectant mothers would, on average, find it easier than expectant fathers to provide a coherent narrative of their infant.

Our couple design also enabled within-couple associations in narrative coherence to be examined. Modest but significant within-couple associations have been demonstrated for diverse parent constructs (e.g., sensitivity, Hallers-Haalboom et al., 2017), alongside concordance in parental values and attachment to the fetus during pregnancy (e.g., de Cock et al., 2016; Don, Biehle, & Mickelson, 2013). Based on these findings we expected to find a modest within-couple association in prenatal narrative coherence.

Intra- and Interpersonal Effects Across the Transition to Parenthood

As noted by Cowan and Cowan (1985), becoming a parent does not simply involve one transition, but three: 'his, hers and theirs" (p.451). Given the intrinsically dyadic nature of couples' experiences, traditional individual-based analyses would appear insufficient. In this study we therefore adopted an actor-partner interdependence model (APIM) to explore both intrapersonal and interpersonal effects on the coherence of parents' narratives about their infant and future parent-child relationship. This approach is ideal for examining well-recognized aspects of family dynamics (Cook & Kenny, 2005). In accordance with family systems theory (Minuchin, 1985), which emphasizes the interdependence of different sub-systems within the family, using APIM allows for notions such as 'spill-over' and 'compensation' effects to be

tested. The former referring to feelings and behaviours from one family subsystem (i.e., parent-parent) being transfers to another (i.e., the parent-child relationship), whilst the latter refers to the valence of the emotion in one relationship being different from the dominant emotion in another thus prompting individuals to seek the opposite experience in their other relationship. In the current study, greater coherence within expectant parents' narratives about their infant and relationship with their infant may be linked to greater satisfaction in the couple relationship (i.e., spill-over) and this may operate at an actor (i.e., own perception of relationship quality) or partner level (i.e., partners' perception of the relationship quality). To date APIM has been proved useful in the wider literature on couple relationships (e.g., Ferriby, Kotila, Dush, & Schoppe-Sullivan, 2015). The current study is, to our knowledge, the first to apply APIM to expectant parents' narratives of their infant.

Correlates of Individual Differences in Expectant Mothers' and Fathers' Coherence

While research on expectant fathers' narratives of their infants has addressed methodological questions about measurement, stability and similarities or contrasts between mothers and fathers (Vreeswijk et al., 2015), correlates of individual differences have each yet to be examined. That said, demographic factors, such as education are known to predict FMSS-based ratings of maternal coherence during toddlerhood (Sher-Censor et al., 2018). Likewise, adverse maternal experiences (e.g., depression, intimate partner violence) have been shown to limit growth in the quality of mothers' narratives about their infants across the transition to parenthood (for a review, see Vreeswijk et al., 2012). In contrast, research with first-time fathers did not find any associations between the nature of prenatal thoughts and feelings about the infant and parent age, education level or depressive symptoms (Vreeswijk, Maas, Rijk, Braeken, & van Bakel, 2014). Given the community nature of the current sample, an exploratory approach was taken in examining associations between parent narrative coherence and demographic characteristics, depression and life satisfaction, with any associations expected to be modest.

Building on this work, our study aimed to examine individual differences in expectant parents' narrative coherence not only in relation demographic characteristics, depression and life-satisfaction, but also in relation to two further correlates that have particular salience for expectant parents: couple relationship quality and type of conception. With regards to the first of these constructs it is worth noting that there is extensive evidence for a decline in relationship satisfaction in early parenthood (Mitnick, Heyman, & Smith Slep, 2009). Moreover, in a study of 153 expectant couples, Ahlqvist-Björkroth and colleagues (2016) reported that levels of marital distress were higher in expectant parents categorized as having an unbalanced narrative (i.e., limited content, negative affective tone) of their infant. Likewise, a recent questionnaire-based study of 40 couples tracked over the transition to parenthood has reported an association between couple relationship quality and parent-fetal attachment that was particularly evident in expectant fathers (Luz, George, Vieux, & Spitz, 2017). Coupled with the recognition that spill-over effects are often stronger for fathers than for mothers (Cummings, Goeke-Morey, & Raymond, 2004), this contrast leads to the provocative idea that, for fathers at least, 'spill-over' might begin before birth.

Turning to type of conception, it is worth noting that there has been a substantial global increase in the number of live births following assisted reproductive technologies (ART), with more than 8 million babies born as a result of fertility treatments in the last 40 years and future estimates of more than half a million babies born per year (ESHRE, 2018). In a rare comparison of parents' narratives about their children who were conceived either naturally or via gamete donation, Golombok, Jadva, Lycett, Murray and MacCaullum (2005) found that mothers who conceived via gamete donation reported higher levels of pleasure and joy in their relationship with the child than did natural conception mothers, although there were no group differences for fathers. However, reverse group differences may be evident during pregnancy, when the outcomes of these 'much wanted' pregnancies are still uncertain. For example, McMahon and

colleagues (1999) found that expectant mothers who used in vitro fertilization were less likely to report conversations with their unborn infant.

In contrast with couples who become parents through gamete donation, approximately 16% of pregnancies resulting in birth in the UK are 'unplanned' (Wellings et al., 2013). Studies have highlighted a number of potentially problematic correlates of 'unintended' pregnancies, including poorer antenatal mental health, reduced health-related behaviors during pregnancy and lower levels of couple relationship quality and social support (Goossens et al., 2016). Of particular relevance to the current study is a questionnaire-based study of 391 pregnant women which found that women with unplanned pregnancies were more likely to choose negative adjectives to describe their unborn infant (e.g., difficult, rejecting) than women with planned pregnancies (Pajulo, Helenius, & Mayes, 2006). Based on this existing literature, we predicted that expectant parents' narratives about their unborn child and future parent-child relationship would show reduced coherence in the context of either an unplanned pregnancy or a more difficult pathway to parenthood (as indexed by use of ART), compared to a planned or natural conception pregnancy.

Summary of Main Aims

In sum, our study of 400 expectant first-time parents (i.e., 200 heterosexual couples) had two main goals. Our first aim was to compare the coherence of narratives from expectant mothers and fathers gathered via the FMSS (Sher-Censor & Yates, 2010). Within this, we aim to examine the individual subscales that constitute coherence and to examine within-couple associations in narrative coherence. Our second goal was to examine individual differences in narrative coherence for these prenatal speech samples in relation to individual differences in parental demographic characteristics, depressive symptoms, life satisfaction, couple relationship quality and conception.

Method

Sample

The sample for this study consisted of 400 participants, recruited as 200 heterosexual cohabiting or married couples (male M_{age} = 33.84, *SD* = 4.35, female M_{age} = 32.46, *SD* =3.60) via antenatal hospital appointments in the South East of England to take part in the [study name blinded]. Ethical approval was granted from the local NHS Research and Ethics Committee. Participants were both expecting their first baby, expected the delivery of a healthy singleton baby and had no self-reported history of psychosis, substance misuse or addiction or were undergoing any extensive medial or therapeutic treatment. Reflecting the demographics of a small university city, the study sample was predominantly White (92.5% mothers and 95% fathers) and well educated (84% mothers and 75% fathers had a Bachelors degree or higher). The large majority (94%) of pregnancies were planned and 11% of the couples had conceived using ART.

Procedures

At 36 weeks gestation (range 32 – 40 weeks) both expectant parents provided informed consent to take part in the first prenatal wave of a 28-month longitudinal study. This initial time-point consisted of online questionnaires and separate semi-structured interviews completed in the home with the expectant mothers and fathers, which began with the FMSS. The FMSS required the expectant parents to talk for five minutes describing their future infant and their relationship with their child (FMSS; Magana et al., 1986). Specifically, the researcher said: *"I'd like to hear your thoughts and feelings about your baby, in your own words and without my interrupting with any questions or comments. When I ask you to begin I'd like you to speak for 5 minutes, telling me what you think your baby will be like and how the two of you will get along together"*. The researcher informed the parent that they would remain silent during the FMSS. If the parent stopped before five minutes and was silent for 30 seconds, the researcher pointed to a

written display of these instructions, and gave brief responses to questions (e.g., "how long have I got left? "a couple more minutes").

Measures

Narrative coherence. Audio-recordings of the FMSS were transcribed verbatim and coded by the first and fourth author for narrative coherence, using Sher-Censor and Yates (2010) coding scheme as adapted from the Insightful Assessment scales (Koren-Karie & Oppenheim, 2004). The first four authors adapted the narrative coherence manual to enable its use with prenatal FMSS. The FMSS were first coded on six subscales using a 7-point scale, with high scores indicative of higher levels which reflect better scores for all scales aside from concern. The six subscales included focus on the child (e.g., sole focus on expectations of the child, relationship, plans for raising the baby), elaboration (e.g., rich and detailed descriptions), separateness (e.g., baby as an independent and unique person), concern/worry (e.g., fears about baby or parenting), acceptance/rejection (e.g., warmth and acknowledgement of potential challenges, lack of judgmental or rejecting descriptions) and complexity (e.g., multidimensional picture of positive/negative attributes, though mainly positive descriptions). With regards to the separateness scale, it was acknowledged that it is developmentally appropriate for expecting mothers to feel a symbiosis with their fetus. Thus, it was important to differentiate between descriptions of mothers that relate to the present and those that relate to after birth during which mothers should be able to relate to the born-child as separate. Within the separateness subscale parents were also scored for the presence of minor or major boundary dissolution (i.e., the roles of caregiver and child are described as equal or reversed).

Overall coherence was rated on a 7-point scale, with a high score reflecting a FMSS sample that was easy to follow, believable, complex and perhaps with elements of metacognitive monitoring, for example recognizing inconsistencies, whilst a low score was given to a FMSS that was meager, one-sided or even contradictory. Scores from the six scales were used to guide

coherence scoring. Specifically, 'good enough' scores on each of the scales (i.e., five or more on focus, elaboration, separateness, acceptance/warmth and complexity, and a score no higher than a four on concern) were required in order to score within the 'coherent' range of five or more. At the lower end of spectrum, a code of one was given when there was no narrative provided, a score of two when the narrative was difficult to follow (e.g., illogical and contrary), and a three or four when it fell below 'good enough' on one of the scales, for example, the narrative may have been warm but lacked evidence to support any statements about the infant or included no challenging or negative aspects. Thus, coherence can be seen to reflect a higher-order capacity, which involves each of the six dimensions, with a higher score reflecting greater coherence. For reliability, 15% of the FMSS were double coded and ICC's were excellent for overall coherence, ICC = .82, and ranged from good to excellent for each subscale; focus ICC = .74, elaboration ICC = .86, separateness ICC = .80, concern ICC = .70, acceptance ICC = .70, complexity ICC = .77.

Demographics. Expectant parents provided information about their age, educational level, ethnicity and income. Parents also provided information about the pregnancy, including estimated date of birth, use of assisted reproductive technologies (e.g., in vitro fertilization, gamete donation) and whether the pregnancy was planned.

Depression. Participants completed the 20-item Centre for Epidemiologic Studies Depression Scale, with mother Cronbach's $\alpha = .79$ and father Cronbach's $\alpha = .85$ (Radloff, 1977). Scores can range from 0 to 60, with higher scores indicating greater depressive symptoms and a score greater than 16 considered as at risk for clinical depression. In the current sample, on average, mothers' ($M = 9.88$, $SD = 5.82$) and fathers' ($M = 7.94$, $SD = 6.19$) scores were within the subclinical range and 13% of mothers and 9% of fathers scored above the cut-off of 16.

Life satisfaction. Participants completed the 6-item Satisfaction with Life Scale, with mother Cronbach's $\alpha = .89$ and father Cronbach's $\alpha = .89$ (Diener, Emmons, Larsen, & Griffin,

1985). Scores can range from 5 to 35, with higher scores indicating greater satisfaction with life. In the current sample, average levels of maternal (M = 30.18, SD = 4.04) and paternal satisfaction with life scores (M = 28.47, SD = 4.70) suggested high levels of life satisfaction.

Couple relationship quality. An aggregate measure of couple relationship quality was created by combining items from the 16-item total score of the Couple Satisfaction Index (Funk & Rogge, 2007) and 6 items from the Conflict Tactics Scale (Straus, 1979). The scores were highly correlated (mothers r = .41, fathers r = .48) and the alpha for the combined set of items was good, mother Cronbach's α = .81, father Cronbach's α = .86. Negatively worded items were reversed so that overall a high score reflected higher quality couple relationship.

Analysis Plan

Descriptive statistics were inspected to examine the variation in narrative coherence within the prenatal FMSS. Paired-samples t-tests were used to examine differences between mothers and fathers and partial-correlations, controlling for parent education, were calculated to examine within-couple associations. To examine associations between the overall coherence and subscale scores and parents' demographics, depressive symptoms, satisfaction with life and couple relationship quality, Pearson's correlations were first calculated and predictors were only included in the final model if they reached statistical significance (note alpha levels were adjusted to account for multiple comparisons). Actor-partner interdependence model (APIM) in M*plus* Version 7 (Muthén & Muthén, 2012) was chosen to account for the inherently dyadic nature of the data to explore actor versus partner effects. To test for parent gender differences in the strength of the pathways, model constraints were built up so that in turn all pathways were constrained to equality and changes to model fit were examined (see supplementary Figure 1). Model fit was assessed using Brown's (2006) recommended criteria: non-significant chi-square, root mean square error of approximation (RMSEA) $\leq$ 0.06, comparative fit index (CFI) $\geq$ 0.90 and Tucker-Lewis Index (TLI) $\geq$ 0.90. Due to the non-normal distribution of the coherence

scores, a robust maximum likelihood estimator was used in the analyses and so the χ^2 difference between each nested model and the comparison model was calculated using the Sartorra-Bentler χ^2 difference test (Satorra & Bentler, 2010). A full information approach was used so that all cases with data could be used in the analyses (however, note that demographic data was available for all participants, only one mother and two fathers did not complete a FMSS and three couples had some missing questionnaire data). This approach is suitable for regression models and produces less biased estimates than traditional missing data handling procedures (Enders, 2001). Finally, independent-samples *t*-tests were used to examine differences in narrative coherence between conception type (i.e., use of ART/natural conception, planned/unplanned pregnancy).

Results

Preliminary Analyses

Prior to exploring the associations with narrative coherence, the within-person associations between demographic, depression, life satisfaction and couple relationship quality variables were examined (see supplementary Table 1). As (might be) expected, for both expectant mothers and fathers there were moderate associations between couple relationship quality and life satisfaction (respectively, $r = .35$, $p < .001$, and $r = .45$, $p < .001$).

Narrative Coherence in Expectant Parents

Table 1 presents the descriptive statistics for narrative coherence and each of the coherence subscales and shows that, overall, expectant parents appear able to focus on their infant, elaborate and provide detail, be warm, see their infant as a separate person and not be overwhelmed with concern (correlations between each of the subscales are presented in supplementary Table 2). However, most expectant parents struggled to provide a complex portrayal of their infant (i.e., scores less than five) and narratives were, on average, rated as displaying borderline levels of coherence (Mother $M = 4.11$, $SD = 1.19$; Father $M = 3.91$, $SD =$

1.15). That is, the average narrative coherence score of four suggests that the narrative fell below 'good enough' on one of the scales, namely lower levels of complexity (i.e., a multidimensional picture of positive/negative attributes was not provided). Boundary dissolutions were extremely rare, with only two mothers and five fathers describing the roles of caregiver and child as equal or reversed (e.g., as a best friend).

Comparisons and Associations between Expectant Mothers and Fathers Descriptions of their Unborn Infant

While both parents scored high on focus, on average mothers (M = 5.91, SD = 1.27) were more likely to keep the infant as the focal point of their narrative than fathers (M = 5.50, SD = 1.46), $t(198) = 3.07$, $p = .002$, Cohen's $d = .28$. However, mothers and fathers did not significantly differ on any other subscale or in overall coherence (see Table 1).

As illustrated by the within-couple associations shown in Table 1, the ability to focus ($r = .16$, $p = .027$), elaborate ($r = .15$, $p = .017$), remain separate ($r = .18$, $p = .016$) and provide a complex description ($r = .14$, $p = .055$) were positively associated within couples, though these effect sizes are considered small. However, no significant within-couple association was found for concern, acceptance or coherence.

Are Parent Demographic Characteristics, Depression, Life Satisfaction and Couple Relationship Quality Associated with Expectant Parents' Talk?

Our first step was to examine associations between coherence and each of the coherence subscales and parents' demographic characteristics. As illustrated in Table 2, parent age, education and income were unrelated to narrative coherence or any of the subscales. Next, we examined associations between parent depressive symptoms and life satisfaction and narrative coherence and its constituent subscales. As also shown in Table 2, depressive symptoms were associated with elevated parental concern in both expectant mothers and fathers. Paternal satisfaction with life was associated with higher ratings of paternal acceptance, complexity and

coherence. A similar pattern emerged between overall coherence and the subscales and couple relationship quality. Specifically, higher self-reported couple relationship quality was associated with greater paternal acceptance, complexity and coherence. In each case, the association was significantly stronger in fathers than in mothers (mean $z > 2.65$, $p < .01$). Thus, fathers' narratives appeared more susceptible to variation in life satisfaction and couple relationship quality than mothers' narratives.

Are There Both Actor and Partner Effects in These Pathways?

Following the above bivariate analyses, an APIM was specified to examine actor and partner effects of life satisfaction and couple relationship quality on narrative coherence. The APIM showed significant and marginal actor effects for fathers, with greater satisfaction in life and the couple relationship associated with higher ratings of narrative coherence. When compared with a model that only applied equality constraints to life satisfaction pathways, another model constraining both life satisfaction pathways and partner relationship quality pathways to equality for mothers and fathers did not significantly worsen model fit. Thus, for reasons of parsimony, the more restricted model was retained (see supplementary Table 3). In this constrained model, fathers' but not mothers' reports of couple relationship quality and life satisfaction were associated with paternal narrative coherence. However, the results of the Sartorra-Bentler χ^2 difference test used to compare models suggested no difference between mothers and fathers in the strength of the actor effects of life satisfaction on narrative coherence, χ^2 (1) = 1.53, p = .580. Figure 1 displays standardized path coefficients from the unconstrained model.

Do Prenatal Descriptions Vary According to the Nature of Pregnancy?

On average, there were no differences in the coherence of narratives provided by parents who used ART versus parents who conceived naturally, mean $t < 1.67$, $p > .10$. Two differences did emerge between the groups of mothers on two of the subscales. On average, expectant

mothers who used ART provided less focused narratives (M = 5.05, SD = 1.66) than mothers who conceived naturally (M = 6.01, SD = 1.18), $t(198) = 3.36$, $p = .001$, Cohen's $d = .67$. Likewise, levels of separateness were, on average, lower for mothers who used ART (M = 6.52, SD = 1.12) than for mothers who conceived naturally (M = 6.91, SD = 0.43), $t(198) = 3.10$, $p = .002$, Cohen's $d = .46$. Note that these average scores are still within the 'good enough' range (i.e., score of five or more). There were no differences between fathers' subscales scores on the basis of mode of conception.

Only 6% of couples (n = 12) reported that their pregnancy was not planned (note that both members of these couples agreed about the nature of the conception in all but one case). On average, there were no differences in the coherence of descriptions provided by parents who had planned or unplanned pregnancies, mean $t < 1.37$, $p > .10$. Two differences did emerge between groups of fathers on two of the subscales. On average, expectant fathers in couples with unplanned pregnancies received significantly lower acceptance scores (M = 4.58, SD = 0.67) than fathers in couples with planned pregnancies (M = 5.05, SD = 0.62), $t(181) = 2.52$, $p = .012$, Cohen's $d = .75$. Narratives from these fathers also showed lower levels of separateness (M = 6.33, SD = 1.30) than those with planned pregnancies (M = 6.82, SD = 0.69), $t(181) = 2.19$, $p = .030$, Cohen's $d = .66$. There were no differences between mothers' subscales scores on the basis of whether the pregnancy was planned or unplanned.

Discussion

During pregnancy, established relationships are tested and new relationships are imagined. By examining the narrative coherence of expectant parents' descriptions of their unborn infants and future parent-child relationship and how these associate with individual and couple characteristics, the current study provides novel theoretical and methodological contributions to the field.

Narrative Coherence can be Assessed During Pregnancy

Our study is the first to apply the narrative coherence coding scheme to FMSS gathered during pregnancy and, this coding appears to have captured individual differences in both mothers' and fathers' coherence. Expectant parents could describe varied attributes of their infant and future parent-child relationship in a coherent manner, but overall these narratives fell just below the 'good enough' level of coherence (i.e., five or more on focus, elaboration, separateness, acceptance/warmth and complexity, and a score no higher than a four on concern). Inspection of the scores from the narrative coherence subscales highlights that these borderline overall coherence scores reflect problematic levels of complexity. That is, during pregnancy first-time parents found it hard to provide a multidimensional picture of their infant and future parent-child relationship that was consistent of both positive and negative attributes that were supported with examples.

Taken in light of previous findings that it is difficult to get parents to describe anything at all about their unborn infant (Arnott & Meins, 2008), overall the expectant parents in the current study provided focused, detailed, separate and warm FMSS that were low in concern. Furthermore, these prenatal narratives of their infant and future parent-child relationship were sufficiently coherent to further explore variability in scores. It should also be noted that a similar proportion of FMSS provided by mothers of pre-school children scored within the incoherent range (Sher-Censor & Yates, 2015). Thus, it appears the FMSS provides a feasible and less labor-intensive method of measuring coherence of expectant parents' narratives of their infants than interviews (e.g., the WMCI) which may be particularly helpful within clinical settings. Future research is required to examine the predictive validity of the coherence of expectants parents' narratives on later parent and child outcomes, which may help identify those who may benefit from early intervention.

Expectant Mothers' and Fathers' Narratives are Equally Coherent

Our study also adds to the growing literature on so-called 'prenatal parenting' (Glover & Capron, 2017). Interestingly, while mothers showed greater focus than fathers, all other subscales yielded very similar results for mothers and fathers. The similarity between expectant mothers and fathers was unexpected and, challenging previous work (e.g., Ives, 2014), suggests that a fathers' lack of physical connection to the fetus does not impede their ability to represent their unborn infant. Future research, for example with adoptive parents or expectant parents who use a surrogate, may prove valuable in testing whether expectant parents' narrative capacities vary according to gestational link.

Note also that our lack of contrast between mothers and fathers echoes reports of similar levels of expressed emotion and warmth in mothers and fathers with 1-year-old infants who also completed the FMSS (Psychogiou, Netsi, Sethna, & Ramchandani, 2013). While it might be tempting to attribute the similarity in maternal and paternal narrative coherence to expectant couples' shared excitement at becoming parents that would lead them to co-construct an image of their infant, our results actually showed no within-couple association in overall coherence. That said, within-couple associations were small but significant for three out of the six subscales (i.e., the ability to focus, elaborate and remain separate). Given that other studies using the Adult Attachment Interview (which asks parents to describe their own childhood experiences) have demonstrated within-couple associations in coherence (Treboux, Crowell, & Waters, 2004), the lack of association in the current study requires both replication and closer attention in more diverse samples.

An alternative account for the lack of difference in narrative coherence between expectant mothers and fathers hinges on our informal impression that mothers' and fathers' speech samples differed in the extent to which they involved 'time travel'. That is, while mothers often described their infant in relation to their expectations of early caregiving, fathers appeared more likely to refer to their child as a toddler or a preschooler with whom they could

engage in shared activities (e.g., football, trips to the park). Thus, fathers' coherence may be lower in terms of infant coherence but their descriptions of their future toddler or child may help add to the coherence of their narrative (i.e., by increasing complexity). If confirmed in future analyses, this temporal contrast may indicate that adopting a more long-term temporal perspective facilitates narrative coherence.

Spill-Over Begins Early

Our study findings suggest that spill-over from one domain of life to another may begin prior to the arrival of the child. Specifically, over and above associations between couple relationship quality and life satisfaction, fathers who reported greater dissatisfaction with life and a poorer quality romantic relationship also had less coherent narratives when describing their unborn child. Explanations for this gendered effect of life satisfaction and couple relationship quality on fathers' parenting typically rest on: (i) the father role being less culturally prescribed and thus subject to greater external influence (Doherty, Kouneski, & Erickson, 1998); and (ii), the father-infant relationship being less distinct from the couple-relationship and separate than the parallel mother-infant relationship (Cummings et al., 2004). However, it should be noted that in the current study the only significant between-parent contrast was the pathway between couple relationship quality and narrative coherence. Arguably, this finding could lend support to the hypothesis that fathers' parenting is more vulnerable than mothers' to spill-over from the couple relationship (Cummings et al., 2004). This view was articulated by one father in our study: "*Whatever the baby is, I guess, I see it as a product of how much we like and love and respect each other. We've got a really good relationship between us and therefore I think that will make it happy*". Others have also noted that men are more likely to use withdrawal as a coping mechanism in the face of relational distress, which in turn may lead to withdrawal in other relationships (Cummings, Merrilees, & Ward George, 2010). Nevertheless, by focusing on couple relationship quality rather than simply conflict, these results add to the literature on spill-

over as not necessarily negative (e.g., Barnett, Deng, Mills-Koonce, Willoughby, & Cox, 2008). That is, transitioning to parenthood with a solid foundation has a particular benefit, in terms of fathers' ability to think about their infant and future parent-child relationship coherently and the wellbeing of both mothers and fathers (as indicated by the interrelated nature of couple relationship quality, parents' depressive symptoms and life satisfaction).

At this point, a note of caution is needed, as the cross-sectional nature of the study precludes any conclusions surrounding causality. Indeed, it is plausible that narrative coherence and couple relationship quality are inter-related because they are each associated with a third factor (e.g., communicative skills). In future work, we hope to follow the current sample over time in order to apply latent growth models to examine the interplay between changes in relationship quality and changes in coherence across the transition to parenthood. Elucidating the direction of effect is of obvious importance for designing effective interventions. For example, as argued by Shonkoff and Fisher (2013), interventions aimed at supporting parents (e.g., by improving couple relationships) may also be valuable in promoting healthy infant development, through related effects on parent-child interactions.

Demographics, Depression and Mode of Conception has Little Impact on Prenatal Narrative Coherence

Expectant parents' depressive symptoms were not associated with the coherence of their narratives about their infant, though they were related to greater expressed concern. This finding perhaps also reflects the community nature of the sample, an explanation which is consistent with reports of null associations between poor mental health and coherence outside of research with clinical populations (Koren-Karie & Oppenheim, 2018; Sher-Censor et al., 2018). Similarly, the lack of association between narrative coherence and parent education may reflect the lack of variation in education level, though studies using the IA, on which the narrative coherence coding scheme is based, have also found no associations with parent education

(Koren-Karie & Oppenheim, 2018). In addition, unplanned pregnancy or the use of ART was not associated with group differences in narrative coherence for expectant fathers or mothers. However, results from the subscales suggest that, compared with expectant mothers who conceived naturally, expectant mothers who used ART were more likely to stray off-topic during the FMSS and less likely to think of their infant as a distinct individual. Previous studies have led researchers to conclude that expectant mothers who used ART are more likely to adopt avoidant coping strategies as a buffer against a potentially disappointing pregnancy outcome (Lee, Mckenzie-Mcharg, & Horsch, 2013; McMahon et al., 1999). Support for this view comes from one mother: "*I don't know…think about it, cause (pause) going through IVF and stuff like that, I try not to think too far ahead, because yeah you're worried that it's not gonna happen so you just try to, you know, ignore it for a little bit*". Indeed, the route to conception was mentioned in just under half (n = 12) of FMSS provided by mothers who used ART. Note however that the relatively small sample size limits the generalizability of these findings but warrants further consideration as the use of ART continues to rise (e.g., 0.3% to 2.1% of all infants born in the UK; HFEA, 2016).

Caveats and Conclusions

Through the application of the narrative coherence coding scheme (Sher-Censor & Yates, 2010) to narratives of expectant couples about their unborn child, the current study adds to the field by demonstrating that the simple and efficient FMSS coding can be used successfully on *prenatal* speech samples gathered from mothers *and* fathers. Though often warm and detailed in nature, these descriptions typically lacked complexity and so were rated as incoherent for almost two thirds of expectant mothers and fathers. However, asking expectant parents to describe their unborn child is an inherently challenging task (e.g., Arnott & Meins, 2008), such that it is impressive that a third of our sample of expectant parents gave narratives that were sufficiently

balanced and complex to receive coherence scores comparable to those given in studies involving mothers with preschool children.

Our study also contributes to the literature through its inclusion of fathers as well as mothers. The lack of between-parent difference and within-couple association in coherence were each unexpected and deserve further attention. Together with the limited differences related to parent demographic characteristics, mental health and conception type, our findings indicate that the processes underpinning expectant parents' narratives of their infant are relatively independent from the physical experiences of pregnancy and indeed from more general predictors of parent outcomes. In view of these null findings, the association between couple relationship quality and the coherence of expectant fathers' narratives is striking.

That said, further research with more diverse samples is obviously needed to test the generalizability of our findings. Specifically, alongside being well-educated and ethnically not diverse, our eligibility criteria (i.e., first-born, healthy singletons) inevitably shaped the low-risk nature of sample, which in turn may have impacted the range of scores and thus the (non-significant) results. Moreover, the small number of unplanned pregnancies (6% versus the national average of 16%) meant that differences by conception type could not be adequately tested. Furthermore it remains to be seen whether the findings indicating spillover from the couple relationship to narratives describing the parent-child relationship will be replicated in same-sex couples. However, given recent meta-analytic findings that demonstrate a predictive link between expectant parents' thoughts and feelings and later parental sensitivity (Foley & Hughes, 2018), our finding, in particular the suggestion that spill-over begins even before birth, provide a potentially valuable focus for interventions aimed at improving couple relationship quality as a means of ensuring a solid platform for the challenges of parenthood.

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Table 1
Narrative Coherence Descriptive Statistics and Within-Couple Associations

	Mother (N = 199)				Father (N = 198)						Mother-Father
	M (*SD*)	Mode	Range	Skew (*SE*)	*M* (*SD*)	Mode	Range	Skew (*SE*)	*t*	*p*	*r*
Coherence	4.11 (1.19)	3	1 – 7	.05 (.17)	3.91 (1.15)	3	1 – 7	.01 (.17)	1.63	.105	-.00
Focus	5.91 (1.27)	7	3 – 7	-.79 (.17)	5.50 (1.46)	7	1 – 7	-.72 (.17)	3.07	.002	.16*
Elaboration	6.34 (1.20)	7	1 – 7	-1.79 (.17)	6.32 (1.15)	7	1 – 7	-1.77 (.17)	.09	.926	.17*
Separateness	6.87 (.55)	7	3 – 7	-4.77 (.17)	6.80 (.73)	7	2 – 7	-4.20 (.17)	1.18	.238	.18*
Concern	2.19 (1.27)	1	1 – 6	.84 (.17)	2.06 (1.21)	1	1 – 7	1.18 (.17)	1.11	.270	.11
Acceptance	5.08 (.62)	5	2 – 7	-.82 (.17)	5.02 (.62)	5	1 – 6	-1.94 (.17)	.90	.372	.02
Complexity	3.88 (1.32)	3	1 – 7	.07 (.17)	3.67 (1.31)	3	1 – 7	.05 (.17)	1.60	.112	.14^{+}

$^{+}p < .10$. $^{*}p < .05$

Table 2
Prenatal Demographic, Depressive Symptoms, Life Satisfaction and Couple Relationship Quality Associations with Individual Coherence and Subscales

	Mother							Father						
	Coh	Focus	Elab	Sep	Con	Acc	Comp	Coh	Focus	Elab	Sep	Con	Acc	Comp
1. Age	-.09	-.06	-.09	-.05	.05	-.14*	-.06	.01	-.10	-.09	.05	.08	-.07	.01
2. Education	-.01	.11	.13	.07	-.05	.16*	-.01	.09	.03	.06	.03	.03	.04	.09
3. Income	.03	-.04	.04	.06	.05	.00	.04	.01	-.08	.14*	-.02	-.03	-.06	.01
4. Depression	.05	.03	.10	-.03	.17*	.01	.07	.03	.08	-.01	-.03	.18*	-.02	-.02
5. Life Satisfaction	**.02**	-.10	-.01	.11	-.07	**.03**	**.01**	**.22****	.12	.06	.11	-.19**	**.28****	**.26****
6. Relationship	**-.07**	-.05	-.07	.00	-.13	**-.01**	**-.06**	**.20****	.04	.05	.08	-.09	**.27****	**.18***

Note. Coh = Narrative Coherence; Elab = Elaboration; Sep = Separateness; Con = Concern; Acc = Acceptance; Comp = Complexity; Relationship = Couple Relationship Quality. Bold indicates significant differences between mothers and fathers in the strength of the correlations.
*$p < .05$. **$p < .01$

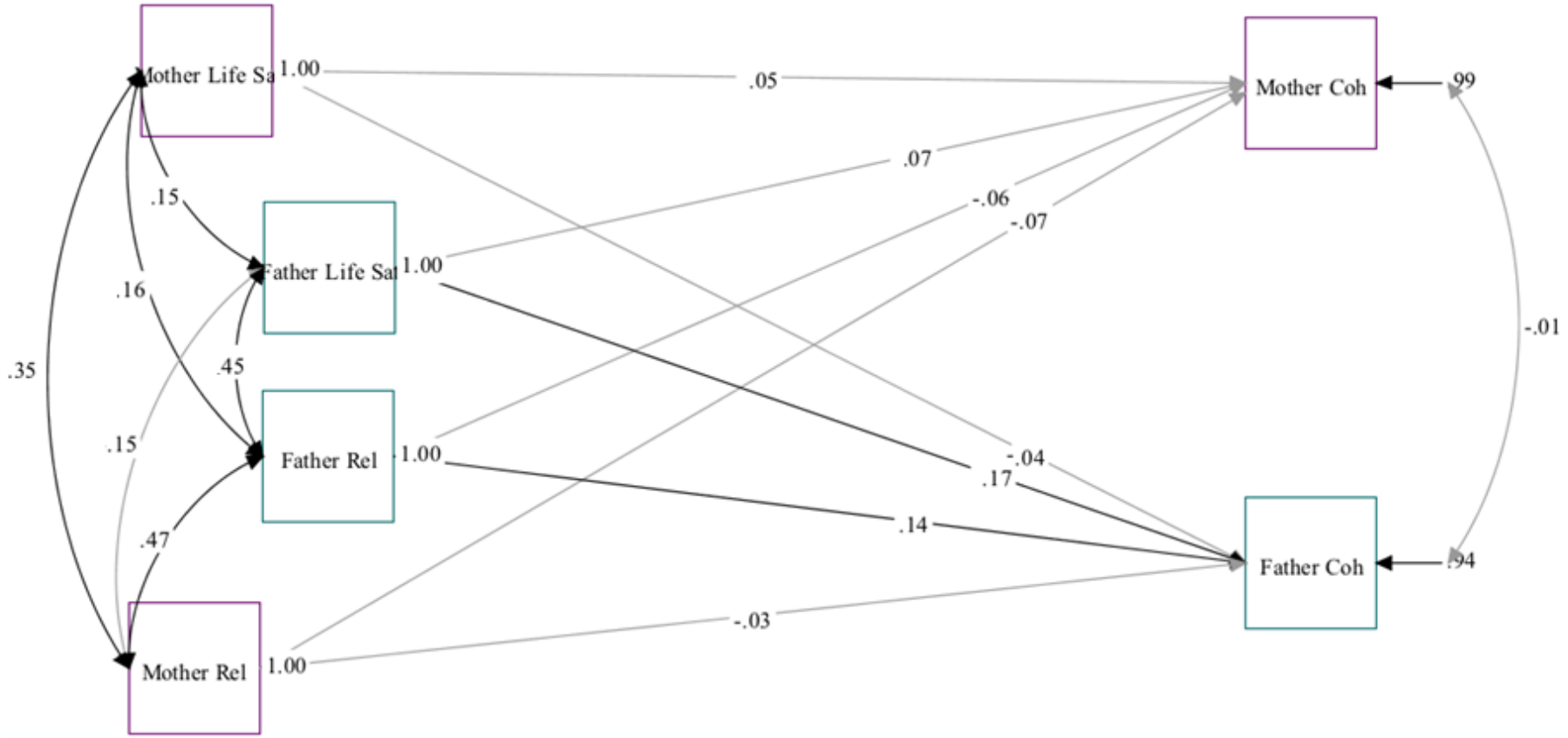

Figure 1. Actor-partner interdependence model of couple relationship quality and life satisfaction on narrative coherence. Standardized estimates displayed.
Note. Life Sat = Life Satisfaction; Rel = Couple Relationship Quality; Coh = Narrative Coherence.